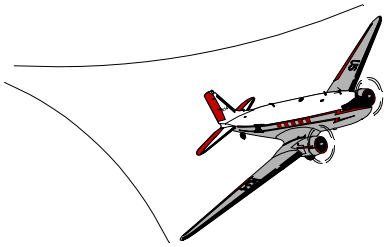
SPECIAL AIRWORTHINESS INFORMATION BULLETIN



U.S. Department of Transportation

Federal Aviation Administration

Aircraft Certification Service
Washington, DC

No. NM-02-47
September 30, 2002

We post SAIBs on the internet at "av-info.faa.gov"

This is information only. Recommendations are not mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) alerts repair stations, mechanics holding Inspection Authorization (IA) and Principal Maintenance Inspectors (PMI) in the Flight Standard District Offices (FSDO) of service difficulties and safety issues associated with certain Marvel Schabler/Facet Aerospace/Precision Airmotive float type carburetors.

Background

The float setting of a recently overhauled Precision Airmotive float type carburetor was implicated in a fatal accident. The accident was characterized by a loss of engine power at idle and subsequent investigation found evidence of sooted plugs associated with a rich-running engine. Flow testing at the Precision Airmotive facilities confirmed that the accident carburetor was indeed flooding at idle, and the teardown revealed a marginal float setting. We believe that the instructions for setting float levels during the carburetor overhaul process could be clarified, and made less susceptible to misinterpretation. To this end, Precision Airmotive has published Service Information Letter MS-4, Revision 1, dated July 18, 2002, Installation Instruction E-954 Revision 2 dated June 18, 2002, and E-955 Revision 2, dated June 14, 2002 to expand and clarify these instructions.

We have included the service information for your convenience.

Recommendation

This recommendation consists of two parts:

1.) All personnel responsible for the overhaul and/or assembly of Marvel Schabler/Facet Aerospace/Precision Airmotive float type carburetors should familiarize themselves with the information contained in Precision Airmotive Service Information Letter MS-4, Revision 1, dated July 18, 2002, and Installation Instruction E-954 Revision 2 dated June 18, 2002, and E-955 Revision 2, dated June 14, 2002, and should maintain this data as part of their carburetor overhaul documentation.

2.) Under NO circumstances should any unauthorized part modifications be employed to comply with the requirements stated by Precision Airmotive literature. In the event of a problem of this nature, Precision Airmotive should be contacted directly to obtain a resolution of the specific problem.

For Further Information Contact

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PRECISION AIRMOTIVE CORPORATION

Service Information Letter - Fuel Systems

SIL MS-4 Revision 1

SMALL RECIPROCATING ENGINES
MA Series Carburetors
Issued 7/18/02

SUBJECT: INTRODUCTION OF ADVANCED POLYMER FLOATS FOR MA SERIES UPDRAFT CARBURETORS.

Revision 1 provides updated installation instructions (E-954 Revision 2 and E-955 Revision 2)

A. EFFECTIVITY: All MA-3, MA-3A, MA-3PA, MA-3SPA, MA-4SPA, MA-4-5, MA-4-5AA, MA-5, MA-6AA model carburetors.

B. REASON: Precision Airmotive Corporation has introduced a product improvement for MSA carburetors. An Advanced Polymer (AP) Float has been developed to improve service life and resistance to damage due to rough handling.

C. DESCRIPTION: MA carburetor floats made from an advanced polymer material are now being produced. The AP float is FAA-PMA approved and is eligible for installation in all MA carburetors. AP floats will also be sold as part of the float kits. The 29-182 and 29-194 float valve clip are not needed with the AP float, see float kit installation instructions for installation details.

P/N 30-802 Is eligible for installation in all MA-4-5, MA-4-5AA, MA-5 and MA-6AA carburetors. Float Kit 666-954, E-954 (Revision 2) kit installation instructions.

P/N 30-804 Is eligible for installation in all MA-3, MA-3A, MA-3SPA, and MA-4SPA carburetors. Float Kit 666-955, E-955 (Revision 2) kit installation instructions.

D. MATERIAL AVAILABILITY: Only AP floats will be available from Precision Airmotive. Existing 30-764, 30-766 brass floats may be used until stock is exhausted.

E. PUBLICATIONS AFFECTED: Overhaul manuals (MSAFSM, MSAOH-3, and MSAOH-4) should be corrected as follows:

1. Replace part number 30-764 and 30-766 with 30-802 and 30-804 on all illustrated parts list pages.
2. Remove part number 29-182 and 29-194 from all illustrated parts list pages. This clip is not used with the AP floats.
3. Add the E-954 (Revision 2) float kit installation instructions to the MSAOH-2 overhaul section of the manual.
4. Add the E-955 (Revision 2) float kit installation instructions to the MSAOH-1 overhaul section of the manual.

NOTE: Future manual releases will reflect these changes.

F. ATTACHMENTS: The E-954 Revision 2 and E-955 Revision 2 float kit instructions are attached to this service information letter and should be kept with the applicable overhaul manual for reference.

NSTALLATION
STRUCTION
E-954

CARBURETOR FLOAT KIT

666-954

MODELS MA-4-5 & MA-5

READ ENTIRE INSTRUCTIONS BEFORE PROCEEDING WITH WORK.

REMOVE CARBURETOR FROM ENGINE.

REFER TO THE APPROPRIATE CARBURETOR PART NUMBER EXPLODED VIEW AND PARTS LIST FROM PRECISION AIRMOTIVE CARBURETOR FULL SERVICE MANUAL; FORM #MSAFSM AND AIRCRAFT CARBURETOR SERVICE MANUAL; FORM #FSM-OH2

KIT PARTS DATA

(1) 16-A31 Gasket-Throttle Body to Bowl

(1) 16-B12 Gasket-Throttle Body to Bowl

(1) 30-802 Float

(1) 32-32 Shaft-Float Lever

(4) 78-A97 Washer-Throttle Body to Bowl Screw

(1) 82-11 Pin-Cotter, Float Lever Shaft

(1) E-954 Instructions

1.0 DISASSEMBLY

1.1 Separate the throttle body and bowl by bending the tabs on the washers and removing throttle body to bowl screws. Discard the washers. NOTE: If necessary to loosen, tap casting lightly with a soft faced hammer and pull apart.

1.2 Remove float shaft cotter pin, float shaft, and retraction clip. Discard these pieces.

1.3 Remove the throttle body to bowl gasket. Discard the used gasket. Consult the Precision Airmotive Carburetor Full Service Manual to determine the correct throttle body to bowl gasket. Discard the unused throttle body to bowl gasket.

STOP! Further disassembly of the carburetor is not necessary to install the float kit.

2.0 INSPECTION

2.1 Before reassembly, thoroughly inspect the carburetor per Precision Airmotive Aircraft Carburetor Service Manual. If additional maintenance is required, now is the time to do it to assure the airworthiness of the carburetor and your work.

2.2 Inspect the float valve and seat very carefully. If it exhibits indications of wear, replace it.

2.3 Insure that the float valve seat and especially the tip of the float valve are clean when assembled. Wipe the rubber float valve tip between a clean thumb and finger with a rotating motion.

3.0 FLOAT INSTALLATION

CAUTION: Exercise care during the following operations to prevent damage to the float.

3.1 Place the float valve into the forked retractor clip on float as shown in Figure 1.

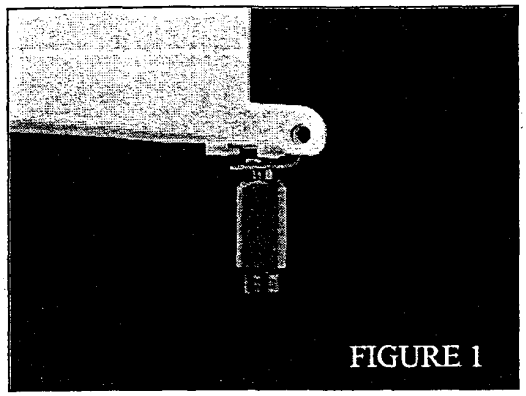

FIGURE 1

3.2 To install the float and float valve, place the throttle body with the mounting flange down and install the proper throttle body to bowl gasket.

3.3 While carefully guiding the float valve into the float valve seat, slide the float into position as shown in Figure 2 and insert the float shaft through the float bracket and the float.

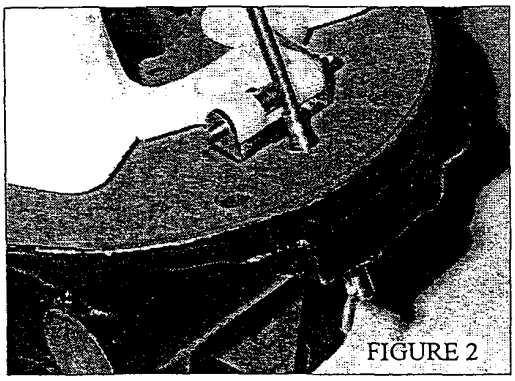

FIGURE 2

3.4 The float setting is established as shown in Figure 3 with 13/64" clearance between the float and gasket measured near the outer end of each float.

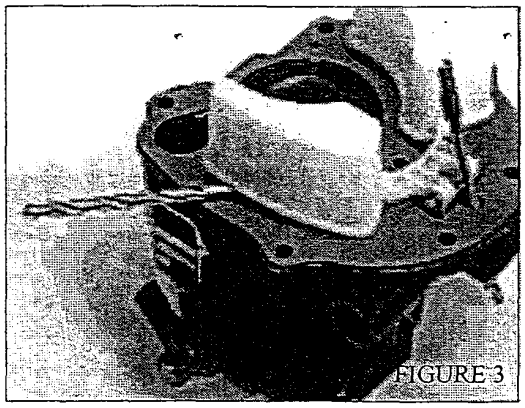

FIGURE 3

3.5 If adjustment is required, bend the float clip adjustment tab located over the float valve to achieve the 13/64" setting. A small screwdriver bent 30° approximately ¼ inch from its tip is a useful tool for making this adjustment.

CAUTION: Float pontoons might not be the same height above the gasket. The allowable height difference between the pontoons is .090". If the heights are not the same, set the float height such that the average of the two pontoon heights is 13/64".

DO NOT APPLY PRESSURE TO THE VALVE AND SEAT DURING ADJUSTMENT BENDING.

3.6 Insure that the float shaft is free to rotate in the float and that the float valve movement is not restricted between the fully open and fully closed position of the float valve. If the float shaft binds in the retractor clip, the clip may be removed and bent a small amount to allow the shaft to rotate freely.

3.7 Insure that proper clearance exists between the float and carburetor bowl using gage M-509 and a .052" drill bit as prescribed in Precision Airmotive Aircraft Carburetor Service Manual. If proper clearance does not exist, the float bracket may be repositioned by loosening the attachment screws, repositioning, and re-torqueing as prescribed in the Precision Airmotive Aircraft Carburetor Service Manual.

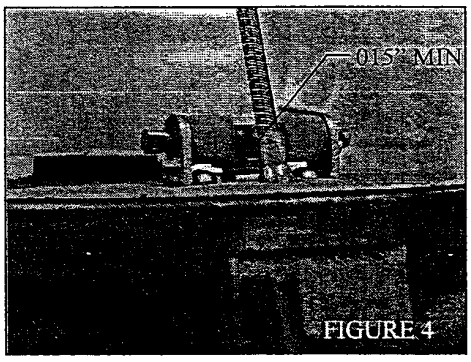

FIGURE 4

3.8 With the throttle body held inverted, insure that a minimum of .015" clearance exists between the forked retractor clip and the float valve seat, as shown in Figure 4. If additional clearance is required, bend the tips of the retractor clip slightly. Ensure that the needle is free to move, and does not bind on the clip.

3.9 When the adjustments have been completed, install the float shaft cotter pin through the float shaft. Bend the ends of the float shaft cotter pin all the way back.

4.0 FINAL ASSEMBLY AND TEST

4.1 Assemble the throttle body and bowl as prescribed in the Precision Airmotive Aircraft Carburetor Service Manual.

4.2 Perform the float valve and seat test as prescribed in the Precision Airmotive Aircraft Carburetor Service Manual.

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN ADVERSE CARBURETOR PERFORMANCE AND ENGINE OPERATION.

4.3 When installation of the float into the carburetor is completed, stamp or etch a small "AP" on the lower portion of the name plate.

CAUTION: To prevent possible damage to the float do not blow on or into the carburetor with compressed air.

E-954
INSTRUCTION SHEET

PRECISION
AIRMOTIVE CORPORATION

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Revision 2 – 6/18/02

INSTALLATION INSTRUCTION E-955

CARBURETOR FLOAT KIT

666-955

MODELS MA-3 & MA-4SPA

READ ENTIRE INSTRUCTIONS BEFORE PROCEEDING WITH WORK.

REMOVE CARBURETOR FROM ENGINE.

REFER TO THE APPROPRIATE CARBURETOR PART NUMBER EXPLODED VIEW AND PARTS LIST FROM PRECISION AIRMOTIVE CARBURETOR FULL SERVICE MANUAL; FORM #MSAFSM AND AIRCRAFT CARBURETOR SERVICE MANUAL; FORM #FSM-OH1

KIT PARTS DATA

(1) 16-B85 Gasket-Throttle Body to Bowl
(1) 16-B75 Gasket-Throttle Body to Bowl
(1) 16-223 Gasket-Float Valve (.016")
(1) 16-224 Gasket-Float Valve (.031")
(1) 30-804 Float
(1) 32-32 Shaft-Float Lever
(4) 78-A110 Washer-Throttle Body to Bowl Screw
(1) 82-11 Pin-Cotter, Float Lever Shaft
(1) E-955 Instructions

1.0 DISASSEMBLY

1.1 Separate the throttle body and bowl by bending the tabs on the washers and removing throttle body to bowl screws. Discard the washers. NOTE: If necessary to loosen, tap casting lightly with a soft faced hammer and pull apart.

1.2 Remove float shaft cotter pin, float shaft, and retraction clip. Discard these pieces.

1.3 Remove and discard the throttle body to bowl gasket. Consult the Precision Airmotive Carburetor Full Service Manual to determine the correct throttle body to bowl gasket. Discard the unused throttle body to bowl gasket.

1.4 Remove the float valve seat and float valve gasket using tool #M-104. Discard the used float valve gasket.

STOP! Further disassembly of the carburetor is not necessary to install the float kit.

2.0 INSPECTION

2.1 Before reassembly, thoroughly inspect the carburetor per Precision Airmotive Aircraft Carburetor Service Manual. If additional maintenance is required, now is the time to do it to assure the airworthiness of the carburetor and your work.

2.2 Inspect the float valve and seat very carefully. If it exhibits indications of wear, replace it.

2.3 Insure that the float valve seat and especially the tip of the float valve are clean when assembled. Wipe the rubber float valve tip between a clean thumb and finger with a rotating motion.

PRECISION AIRMOTIVE CORPORATION

3.0 FLOAT INSTALLATION

CAUTION: Exercise care during the following operations to prevent damage to the float.

3.1 Install the float valve seat and 16-223 (.016") float valve gasket using tool #M-104. Torque to 10-12 foot pounds.
NOTE: Initial run-in torque must be at least 6 inch-pounds. If run-in torque is less than 6 inch-pounds, the nylon locking element is degraded or damaged, and the float valve seat must be replaced.

3.2 Place the float valve into the forked retractor clip on float as shown in Figure 1.

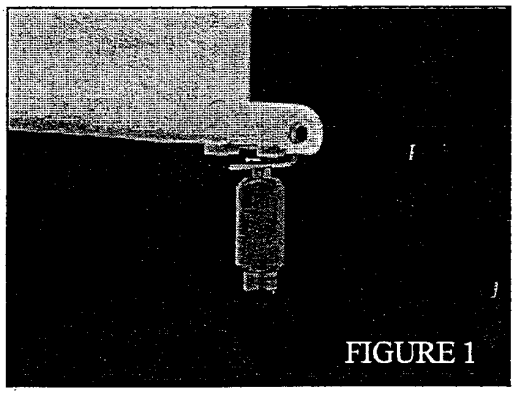
FIGURE 1

3.3 To install the float and float valve, place the throttle body with the mounting flange down and install the proper throttle body to bowl gasket.

3.4 Place the float and float valve assembly into the float bracket with the float valve in the float valve seat, as shown in Figure 2.

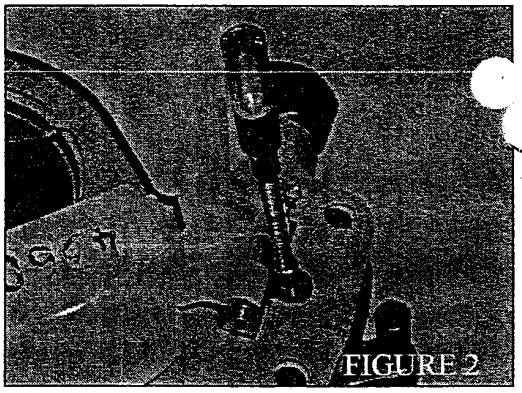
FIGURE 2

3.5 Insert the float shaft through the float bracket and float.

3.6 To adjust the float properly it is suggested a 7/32" drill rod be used as shown in Figure 3 to measure the adjusted clearance between the throttle body to bowl gasket and float, measured near the tip of each pontoon.

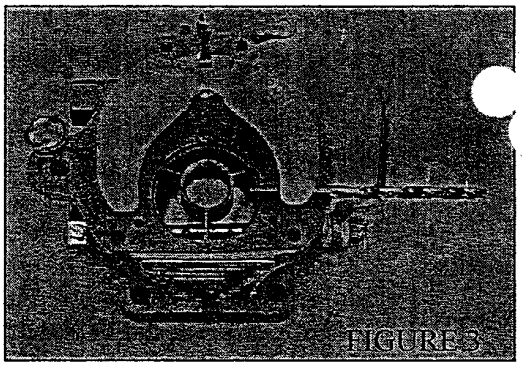
FIGURE 3

3.7 If adjustment is required, bend the float clip adjustment tab located over the float valve to achieve the 7/32" setting. A small screwdriver bent 30° approximately ¼ inch from its tip is a useful tool for making this adjustment. Do not bend tab more than .030". If additional adjustment is required, return to step 3.1 and use the 16-224 (.031") float valve gasket or a combination of the 16-223 and 16-224 float valve gaskets.

CAUTION: Float pontoons might not be the same height above the gasket. The allowable height difference between the pontoons is .090". If the heights are not the same, set the float height such that the average of the two pontoon heights is 7/32".

DO NOT APPLY PRESSURE TO THE VALVE AND SEAT DURING ADJUSTMENT BENDING.

3.8 Insure that the float shaft is free to rotate in the float and that the float valve movement is not restricted between the fully open and fully closed position of the float valve. If the float shaft binds in the retractor clip, the clip may be removed and bent a small amount to allow the shaft to rotate freely.

3.9 Insure that proper clearance exists between the float and carburetor bowl using gage M-510 as prescribed in Precision Airmotive Aircraft Carburetor Service Manual, except substitute a .031" drill bit for the .081" drill bit. If proper clearance does not exist, the float bracket may be repositioned by loosing the attachment screws, repositioning, and re-torqueing as prescribed in the Precision Airmotive Aircraft Carburetor Service Manual.

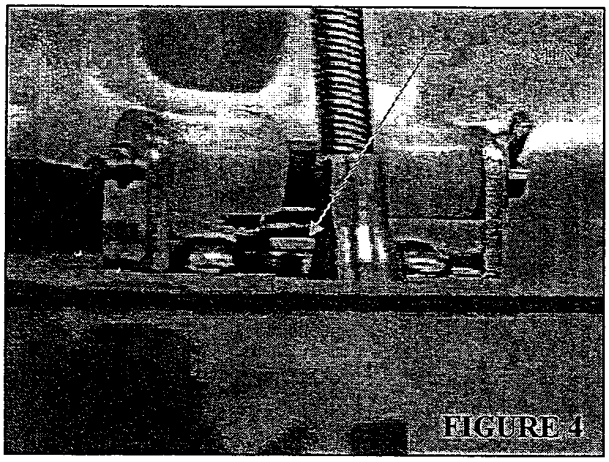

FIGURE 4

3.10 With the throttle body held inverted, insure that a minimum of .015" clearance exists between the forked retractor clip and the float valve seat, as shown in Figure 4. If additional clearance is required, bend the tips of the retractor clip slightly and/or use a thinner float valve gasket. If a thinner float valve gasket is used, return to step 3.1 and repeat adjustment procedure. Ensure that the needle is free to move, and does not bind on the clip.

3.11 When the adjustments have been completed, install the float shaft cotter pin through the float shaft. Bend the ends of the float shaft cotter pin all the way back.

4.0 FINAL ASSEMBLY AND TEST

4.1 Assemble the throttle body and bowl as prescribed in the Precision Airmotive Aircraft Carburetor Service Manual.

4.2 Perform the float valve and seat test as prescribed in the Precision Airmotive Aircraft Carburetor Service Manual.

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN ADVERSE CARBURETOR PERFORMANCE AND ENGINE OPERATION.

4.3 When installation of the float into the carburetor is completed, stamp or etch a small "AP" on the lower portion of the name plate.

CAUTION: To prevent possible damage to the float do not blow on or into the carburetor with compressed air.

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INSTRUCTION SHEET

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